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ABSTRACT

This paper presents a brief overview of current research on learner-centered curricular reform and of some of the issues attendant to its character and quality. Seven groupings of learner-centered reform are discussed in relation to current research and findings: performance and competency-based programs, personalized instruction, cooperative learning and programs for the nontraditional student, time-shortened baccalaureate programs, interdisciplinary programs, individualized degree programs, and independent study. (MJM)

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ASSAYING THE GREAT CARGO CULT: RECENT RESEARCH ON LEARNER-CENTERED CURRICULA*

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Abstract

This paper presents a brief overview of current research on learner-centered curricular reform, and of some of the issues attendant to its character and quality. The authors propose this as background for an oral presentation which focuses on guidelines for future research.

Anthropologists have become quite fascinated with a post World War II phenomenon in the remote regions of Melanasia. During the Pacific war, certain tribes experienced the sudden impact of advanced civilization in the form of fabricated goods literally dumped into their primitive worlds. The ships and planes that served as the vehicles of this boon have since become totems of a living "cargo cult," which anticipates a millenium of unstinting delivery.

The Melanesian scanning the sky for return of the great silver-skinned bird has his analogue in modern-day USA. Our bird is the promise of higher education. The cargo is personal and social fulfillment. We hear reports that now and then a token cargo is dropped, but we, like our south-sea brethren, chafe at a system whose gifts are so sparce and capricious. We seek some magic that will insure delivery. Many of us look to the multitude of learner-centered reforms as our strongest medicine to date.

Just how good are learner-centered reforms? What does the research tell us? In this form, the question is unmanageably complex for two reasons. First, because every non-traditional academic venture--from mammoth open universities and comprehensive equal-opportunity programs for the New Learners to minor shifts in calendar and grading systems--pleads its case in terms of sensitivity to learner needs. In this respect, all innovation claims to be learner-centered, just as all opposition to innovation shapes its case on grounds of protecting the learner.

Second, the quality of learner-centered reform is only in part a "researchable" question. Research can comment on whether a given learner-centered reform meets its avowed objectives, if it has any. It is largely powerless to comment on whether those objectives ought or ought not to be met. As presently construed, research speaks to the effectiveness, but not the propriety, of learner-centered reform--a limitation that will capture our attention later.

The situation improves slightly when we limit our focus to "learner-centered curricula." Here we are concerned with innovations specific to the formal educational processes to which students are subjected. In general, it would be fair to say that they are innovations sparked by a substantial shift of concern toward serving the developmental needs of the individual student, and away from simply projecting a fixed body of knowledge, lore, or wisdom. The various forms of learner-centered curricula impute an added responsibility to the educator. To fulfill his professional

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obligation, he must not only insure student access to an educational experience that promises outcomes; he must insure student acquisition and exhibition of those outcomes.

There are two quite different approaches to serving the developmental needs of the individual student. While a given innovation may represent a blend of these approaches most learner-centered curricula can be arranged by emphasis under one or the other. The first seeks to address the learner's socially prescribed developmental needs. The second emphasizes the learner's own developmental prescription.

The vast bulk of contemporary learner-centered curricular innovation is of the sort that addresses student development as socially prescribed. Performance-based teacher education heads the growing list of post-secondary professional programs that focus on developing job-specific competencies in learners. Even our most prestigious professions are moving in this direction--witness Southern Illinois University's competency-based School of Medicine. Competency-based prescriptions for the "Good Life," encompassing all of the arts and sciences, flourish at such institutions as Alverno and Mars Hill Colleges. At a more molecular level, the Personalized System of Instruction or Keller Method, and various related mastery techniques with carefully modularized outcomes, are proliferating in all disciplinary fields. Most three-year or variable-time baccalaureate programs, as well as flexible-time, external degree, and credit-for-experience programs of all sorts, base their rationale on a set of learner outcomes that are socially prescribed, but dependent neither on time nor location for their development. Similarly, a renaissance of work-study, thematic, and interdisciplinary programs justifies itself as producing socially relevant learner outcomes.

These alternate routes to achieving socially prescribed growth go far toward meeting the asserted student need for more educational options and greater selectivity; but there are other innovations which seek to place the developmental prescription squarely in the student's own hands. Student contract learning, with its expansion of the old independent study approach to fill, in some cases, the totality of a baccalaureate program, is a case in point. The notion which imbues some learner-centered curricula-that there are generic and socially relevant competencies that can be developed while the student pursues a set of more specific personal interests--marks an idealized rapprochment of the two trends in specifying what is to be developed in the "learner." Unfortunately, evidence for an achieved synthesis of developmental goals--the student's own and those socially prescribed--goes little beyond the supportive rhetoric.

To impose order in the confusing and often overwhelming types of learner-centered reform, we have chosen seven groupings:

1) Performance and competency-based programs
2) Personalized instruction (PSI, audio-tutorial, and computer-assisted instruction)
3) Cooperative learning and programs for the non-traditional student (including external degree and contract learning ventures)
4) Time-shortened baccalaureate programs
5) Interdisciplinary programs
6) Individualized Degree programs
7) Independent study

We shall attempt to characterize current research and findings as they emerge within each grouping, following two final cautions.

The first caution involves what we choose to count as "research." If we were to invoke all of the strictures of classic behavioral science research in pre-screening efforts to "make sense" out of learner-centered curricula, we would be forced to remain mute about the great bulk of such ventures. Most of what is perforce called research stems from efforts to "evaluate" innovative curricula, in the sense that evaluation has come to be a penance for the original sin of innovation. Research simply prompted by a desire to analyze efforts is almost as rare amidst innovative curricula as it most certainly is amidst traditional curricula. Despite the fact that evaluation is frequently stimulated by a need to explain or defend curricular innovation, it is often done with reputable features of pre- and post-testing and control. Even where the only evaluative instruments are not standardized, and seek attitudinal or affective data, there is increasing concern that the items be valid and the scales reliable. There appears to be a growing sophistication, at least about instrumentation, in both the published and unpublished evaluative efforts; it is to this whole body of plausible attempts to portray the dynamics of learner-centered curricula that we point with the term "research."

Our second caution relates to the scope and intent of this report. We have not sought systematically to cover the entire domain of research pertaining to learner-centered reform; this is not a standard review of the literature. Others have performed this function for various subsets of learner-centered curricula, and the reader will find their names embedded in this presentation. We have sought, on the other hand, to acquaint ourselves with the predominating trends exhibited by the research, in terms of both general findings and the issues they raise.

Research on Performance and Competency-Based Programs

Today's premier educational reform--performance or competency-based teacher education--is too new, far-flung, complex, volatile, and controversial to succumb to easy capsulization. Research on PBTE is perhaps best characterized as in abeyance--waiting for the dust of development to subside enough for the emergence of clear targets. The issues which PBTE has wrenched to consciousness in the educational community are at once mammoth and distressingly fundamental. They swirl about the desirability and the capacity to cast education in terms of specific behavioral objectives. Thus far, they are issues that have been served almost exclusively by debate--very little by research.

Given that the movement is in its earliest adolescence, it is difficult to see how things could be otherwise. The PBTE literature is vast, and almost totally of a genre one might call "design literature." There are designs for total PBTE systems, proposed taxonomies of teacher competencies or designs for formulating them, designs for competency-specific modules and for total curricula, designs for student performance assessment, and designs for program evaluation. The small portion of literature that might be classed as research is almost exclusively descriptive, and reports either analyses or comparisons of "what is being done" (e.g., Sherwin, 1973). A review of Dissertation Abstracts on PBTE discloses an added step toward research: studies which take competency lists from PBTE programs to practicing teachers for various rankings and corroborations.

There are two reasons why this PBTE design literature merits the attention of anyone interested in learner-centered curricular research. First, a good portion of the design literature leans heavily on a broad array of pre-PBTE educational research (see, for instance, Sandefur, 1970); and there is utility in examining how cases have been built on prior studies. Second, and most importantly, the design literature is an excellent preview of the problems which confront, and likely will engross, the greater portion of educational research in the foreseeable future.

The publications of the American Association of Colleges for Teacher Education provide an optimal point of entry to the PBTE literature, particularly their PBTE Series. Start at the top with No. 1 in the series, by Stanley Elam (1971). Schmider (1973) provides a useful glossary of terms and issues. Next, focus on the workings and the literature about the workings of the nine National Competency-Based Education Centers. An important access point for research on PBTE is the National Commission on Performance-Based Education directed by Frederick McDonald.

The extent of current efforts to establish non-professional baccalaureate programs in a competency-based mode, when contrasted with the quantity of work on PBTE, must be considered miniscule. But what is lacking in scope of effort is not lacking in significance. Several small liberal arts colleges have affected total conversions of their programs to a competency-based mode, and a handful of larger institutions have initiated partial conversions or competency-based alternatives. In these cases, the effort is largely one of identifying genuine competencies, as opposed to task-related skills. Since the aspirations these programs have for their students tend to be more cosmic, the criterion and objective-setting problems they face are even more troublesome than those in PBTE. The Competency-based Undergraduate Education (CUE) Center at Bowling Green State University was formed to stimulate research in identifying competency objectives for general education.

As with the PBTE literature, publication on non-professional CBE ventures is largely of the design variety. The best access is by writing directly to Alverno College, Mars Hill College, Sterling College, Grand Valley State Colleges, the College of Public and Community Service at University of Massachusetts - Boston, Bowling Green State University, etc. Again, the prime value of the literature lies thus far in its capacity to explicate problems of educational purpose; not in its capacity to provide tested solutions.

Despite the mounting tide of commitment in all sectors of competency-based reform, first-generation performance and competency constructs remain largely untested. In some instances, the surrogate for a behaviorally specified competency has become the affirmative nod from a panel of faculty, and one questions how vast a divergence from tradition this really is. In addition, the question of which educational treatment best serves the development of a particular competency has barely been phrased.

Research on Personalized Instruction

The term "personalized instruction" here embraces a collection of approaches: computer-assisted instruction (CAI); audio-tutorial instruction (A-T); and the Personalized System of Instruction (frequently called "PSI" or "Keller Method"). These methods are pervasive in current learner-centered reform. In addition to generating the most substantive body of learner-centered research, they frequently emerge as components in other genera of curricular innovation. For these reasons, it may be worth reviewing the traits of personalized instruction.

PSI, A-T, and CAI share the following characteristics:

1) The mode for learning interaction is one-to-one; the key relationship is between the individual student and the instructor, be that instructor man or machine.

2) PSI, and increasingly CAI and A-T, apply the mastery learning concept, which requires students to demonstrate achievement in each of a sequence of learning units, or modules. These modules feature clearly prescribed objectives, means to achieving those objectives (i.e., students are presented with study guides that may suggest alternative readings or tasks), and the method by which mastery will be demonstrated (i.e., by paper and pencil test, by computer-interactive test).

In the last several years, PSI has dominated the program development and research literature, relative to CAI and A-T approaches. In addition to the features listed above, PSI is characterized by the following:

1) Written tests as evidence of unit mastery.
2) Self-pacing, in which the student proceeds through mastery units and, therefore, through entire courses, at his or her own speed.
3) Undergraduate or graduate student proctors, who offer immediate feedback to students based on unit mastery quizzes, render suggestions for redressing sub-par performance, and, in general, provide informed and empathetic guidance to the individual student.
4) The employment of professorial lectures for the sole purpose of motivation. The bulk of learning is envisioned as occurring through the study guides and in interaction with student proctors.. (Ruskin, 1974).

The interaction between student-learner and student-proctor is envisaged as positively reinforcing. The student is constantly apprised of his or her progress; knows that mastery is not constrained by time; and understands precisely what is expected throughout the course.

Much of the PSI research, like most of that on CAI and A-T approaches, has centered on effectiveness relative to "traditional" lecture, lecture-discussion, or laboratory modes of instruction. The normal research design, then, involves dividing a course into PSI/non-PSI sections (generally stratifying those sections according to such input variables as aptitude, pre-test scores, and previous achievements), and comparing the two course sections at the end of the term on a common paper and pencil test. Comparisons are often effected on the basis of course and teacher evaluations. For excellent reviews of the PSI research literature, the reader is referred to Ruskin, Milton (1974), and Kulik, et al. (1974). The research has fairly consistently shown PSI sections to stimulate significantly higher test scores and more favorable evaluations of course and instructor.

Recently, researchers have manipulated the various components of PSI, such as testing procedures, proctor characteristics, and student pacing. Davis (1974), for example, demonstrated that PSI students achieved higher final exam scores when their mastery unit tests included review items in addition to current-unit-specific items. Interestingly, when the final exam was an important grade determinant, Davis noted that the achievement differential between PSI and control groups was not significant.

Relatively few studies have addressed the question of PSI's longer-term consequences. These studies have tended to show greater content retention among PSI students (Austin and Gilbert, 1973; Moore, Hauck, and Gagne, 1973). The work of Moore, Hauck, and Gagne suggests that PSI experience may facilitate student achievement in subsequent lecture courses.

PSI components in traditional course settings have also been examined. Williams and Lawrence (1974), for example, found that students in a lecture course varied in final exam performance according to the frequency of quizzes administered.

A few studies in the domain of personalized instruction have addressed learning outcomes in other than knowledge-retention terms. For example, the work of Rice (1973) suggests some accretion of communicative skills engendered by the audio-tutorial approach.

Nevertheless, the term "parochial" may characterize much of the research on PSI, CAI, and A-T instruction. From a base of macro-comparative studies, PSI researchers in particular have tended to work inward--to analyze the effects of manipulating one or another PSI component. Some larger questions have in the main gone unasked, and therefore unanswered. What motivational effects--aside from attitude toward class or instructor--does PSI have? What capabilities for later life are cultivated? What human characteristics mediate the effects of PSI or CAI or A-T?

The PSI literature abounds with theories and claims that have yet to be substantiated. The faculty member or administrator who is considering implementing PSI may hear that such a system enhances a student's self-image, confidence, self-starting capacities, and organizing capabilities. The evidence deals with meeting course-specific objectives. Whether meeting such objectives translates into other capabilities remains unclear.

In addition, the fundamental, long-term utility of content mastery as demonstrated on a written test is open to question. Conceivably, mastery so defined indicates little more than test taking ability. Issues of what focal competencies should be selected for mastery are largely unexplored, and many personalized instruction ventures are straight translations from traditional syllabi. Their relevance to the development of basic capabilities that are life-long and transferable is therefore indistinguishable from that of their traditional counterparts.

There have been germinal efforts to address these and similar issues. Faculty of Northwestern's Center for the Teaching Professions have considered subject self-perceptions of capacity to control their environment (locus of control) as a mediating variable in a CAI education psychology course (Menges, personal communication, 1975). Judd, et al. (1974a; 1974b), considered such variables as locus of control and achievement/independence as they related to anxiety, learner control (demonstrated through requests for mnemonics or pictorials), and errors on quizzes and tests. While few significant relationships have been isolated, these endeavors are encouraging. They seek to identify non-course-specific factors that contribute to or result from the employment of personalized instruction. Finally, researchers at Bowling Green State University are beginning a longitudinal, multi-course study of PSI in different disciplines as a first-generation attempt to assess the method's effect on generic competencies, regardless of content-specific course objectives. The effort will probe whether such capabilities are more readily achieved through PSI, and whether they are retained and generalized. The study will also attempt to identify PSI components that seem critical to competency development and that might be applied selectively to other instructional methods.

Research on Cooperative Learning and Programs for the Non-Traditional Student

The term "cooperative" describes that study which encompasses "work in the real world as a vital learning experience complementing the formal curriculum" (Cross, 1973, p. 7). In current parlance, "non-traditional" study often refers to external degree programs, University Without Walls, Open University--briefly, institutions or programs within institutions that address the perceived needs of non-traditional

learners, particularly adults (Cross, pp. 40-43). Its commonality with cooperative education is its attempt to integrate external, real-life experiences (particularly work) in a program of study often leading to a degree.

Research in both these areas is perhaps more problematic than that concerning other forms of learner-centered reform. The difficulty stems from the lack of clear formulas for equating non-classroom learning to the more traditional learning experiences, in which standards and credit hours are established. It is a problem one level removed from that of the PSI program developer or evaluator; if one accepts the dominant outcomes of course-based higher education, namely content retention and achievement, the comparison of personalized instructional approaches to traditional modes is a straightforward endeavor. But, in the case of cooperative and or non-traditional studies, how does one compare non-course experience with traditional course outcomes? This remains a nagging question, one that has brought home to researchers a need to establish the "credibility" of non-traditional programs (Hartnett, 1972).

One might view this lack of comparability as an opening for the illumination of the broader goals of higher education. Indeed, proponents of non-traditional study may point to the development of "life skills" engendered by experiential learning. But what are these skills? The evaluation of non-traditional programs has not addressed this question. Instead, it has tended to compare traditional and non-traditional students on standard achievement measures (Hartnett). Or, it has been descriptive in nature, performing a function akin to manpower or market surveys, describing the immediate perceived needs of the "new student" and the characteristics of programs to serve those needs (Stroky, 1973; Davidson and Shoenhair, 1974).

An often essential characteristic of cooperative and non-traditional studies is the employment of learning contracts. Briefly defined, such a contract is a statement of intent "drawn up by a student and a mentor or advisor that specifies what a student will learn in a given period of time and how. The contract is distinct from traditional course credits or semester equivalents and is evaluated but not graded." (Mayville, 1973, p. 3). The emphasis is often on non-course experience. Studies in this area have tended to provide client demographies (Empire State College, undated) and analyze the post-experiential or post-graduate outcomes for students (Palola and Bradley, 1973). As with non-traditional education in general, evaluators of contract learning are faced with the issue of equating experiential to course-bound education.

Since this issue has not been effectively addressed, researchers have tended to avoid direct comparisons between traditional and non-traditional curricula. Yet, interestingly enough, attempts to specifically analyze non-traditional ventures have tended to employ the evaluative criteria and procedures typical of course-focused curricula. Thus, Barlow (1974), in a highly illuminative discussion of "An Experiment With Learning Contracts," based assessment of a contract experiment on his own learning activities log, student achievement, and student evaluation of the contract method. The author acknowledged that "due to the speculative nature of the subject and the basic dissimilarity of the contract and classroom methods, unambiguous quantitative comparisons [were] not possible." (p. 440). The "apples and oranges" syndrome expressed here seems to permeate contract learning research. Thus far, it appears to have effectively curtailed our ability to contrast two quite different dynamics: one in which the learner meets educational prescriptions, and another in which he helps shape them.

Research on Time-Shortened Baccalaureate Programs

Although time-shortened baccalaureate programs are not new, their recent proliferation may have been stimulated by the Carnegie Commission Report, Less Time, More Options (1971). That report did not base its claims concerning the desirability of time-shortening on empirical research. Rather it furnished an implied set of hypotheses to be tested.

Research questions being asked in the time-shortened domain include the following: How can the baccalaureate be shortened? How does a shortened baccalaureate impact on learning processes? Does it have an effect upon maturation? What is the relationship between a time-shortened degree and the development of generalized capabilities? Does time-shortening really save money? How can one evaluate the effect of time-shortening on the individual and on the institution? How are time-shortened degree programs mounted, implemented, and institutionalized?

Understandably, much more time has been spent creating time-shortened degree programs than in examining them systematically. Nevertheless, some work has been done and more is in process. The twelve institutions which received Carnegie Corporation grants have been engaging both in individual research and in collective information-sharing (see Giardina, Litwin, and Cappuzzello, 1973, as well as individual institutional studies).

A study conducted by Willard Spaulding and Carnegie project participants (1973) at Dominguez Hills, Bakersfield, and San Francisco indicated that "far fewer students than expected have chosen to accelerate their progress to the baccalaureate degree through the three campus programs" (p. 69). Among its conclusions was the following:

> Self-paced programs will yield the greatest amount of acceleration when criteria for predicting student's success in them include (a) a proven capacity for self-directed learning and (b) strong motivation to speed progress to the baccalaureate degree. (p. 70)

The study reveals what appears to be a chronic difficulty in baccalaureate time-shortening: the task of defining degree objectives clearly enough to serve as criteria for what should and should not be addressed by the curriculum.

In addition to the above, an extensive AASCU study by Bersi (1973) attempted to categorize approaches to time-shortening and "zero in" on cost savings. A Southern Regional Education Board Conference Report (1972) attempted to provide a rationale for the time-shortened degree. Finally, Charles Meinert, in a recent and most comprehensive study entitled Time-Shortened Degrees (1974), suggested that the time-shortened issue really is dependent upon answers to other questions concerning the nature of the baccalaureate and its objectives in terms of competency development.

> Although the phrase 'time-shortened degrees' may disappear as a popular topic or focus of concern in higher education, many of the pressures, concerns, and responses associated with the subject...will remain significant educational issues for the remainder of this decade and beyond. (p. 88)

Research results thus far have been somewhat superficial. Most studies have shown significant cost savings (e.g., Bersi) without detailing the financial implications which arise when shortened degrees combine with enrollment declines. Some studies have suggested that the deleterious effects of time-shortening on maturation are negligible;

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however they have not followed through into the world of work to look at possible long-term consequences. A number of approaches to time-shortening (e.g., early admission) have avoided serious questions about the nature of the baccalaureate and the objectives of undergraduate education. They have merely substituted a shorter time frame for a longer one.

Nevertheless, some time-shortened efforts, such as those at Bowling Green, Colgate, and SUNY-Brockport, are grappling with how learning takes place and what competencies individuals need to lead fulfilling lives in a complex and rapidly-changing world. Such research holds a great deal of promise for attuning degree programs more effectively to societal demands and individual needs. Some of this work suggests that the length of the baccalaureate program is not a determining variable in learning acquired or competencies attained. It emphasizes the importance of developing pedagogical approaches which correlate highly with desired outcomes, and explores the assumption that differing individuals may utilize different approaches to attain the same results in terms of skills developed. Much of this research is just beginning, and its impact will not be felt for a number of years, except in isolated experimental settings.

Research on Interdisciplinary Programs

Considering the many contexts for interdisciplinary studies and programs (freshman seminars, senior seminars, general education "core" curricula, interdepartmental majors, interdisciplinary "clusters," even interdisciplinary colleges) one might be led to believe that such programs have taken the collegiate scene by storm. The fact that this programmatic diversity finds its expression in an equal diversity of institutional types (e.g., SUNY-Brockport, Dominquez Hills, Bowling Green, Evergreen, Grand Valley, Hampshire, Redlands, Michigan State, Alabama, Santa Cruz, Miami of Ohio, and Green Bay -- to name just a few) supports the suggestion.

Interdisciplinary programs are indeed "booming" (see Foa, 1973; Spalding, et al., 1973), unless one considers the number of students they seem to attract. In fact, if the limited volume of research in this area tells us anything, it is that interdisciplinary programs are not "big draws." The research does not clearly specify why this is so. Levine and Weingart (1974) have a hunch, however:

> Attempts at reform, however stimulating and numerous and creative and hopeful, are at loggerheads almost everywhere with traditions--traditional student passivity and traditional university reward systems that extol specialization and concentration. (p. x)

Furthermore, impressions of interdisciplinarity are diverse, pro and con. Morrison and Swora (1974) stressed the need for continued development of interdisciplinary programs, citing their salutary effects on student-teacher relationships. Dressel (1971), however, wrote that interdisciplinary programs offer too little evidence to justify further large-scale adoption in college curricula.

The paucity of students is matched by the scarcity of research on the student outcomes to interdisciplinary programs. The reason behind this scarcity may be relatively straightforward. It is difficult to compare "treatment" (interdisciplinary) and control groups on achievement because the former stresses content of a different order. Interdisciplinary programs stake their claims to viability on the development of skills or knowledges that, of necessity, fall outside the purview of single discipline (e.g., a course on regional ecology). Comparative evaluation becomes minimally useful in such a context.

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The majority of writing on interdisciplinary studies and programs is either purely descriptive (Dreyfuss, 1973), or analytical in the limited sense that it speculates on factors which inhibit the growth of the movement. Levine and Weingart suggest that "interdisciplinary and team-taught programs often fail because faculty do not want to teach them. When faculty do teach them, they are unable to integrate their discipline or work together" (p. 8). The authors suggest that many programs suffer because of an initial illusion that interdisciplinary studies are easy to bring off. They are not overly impressed with the success of interdisciplinary reform in general education, and propose that alterations in graduate education and faculty reward systems may do more to change faculty approaches to teaching.

Regrettably, none of this work has been able to analyze the effect of interdisciplinary studies on student performance. Some efforts have been launched in this arena--unpublished research reports of Bowling Green's Little College, Humanities Cluster College, and Science Cluster College programs are a case in point--but it will be some time before sufficient data exist to address the sort of reservations expressed by Dressel, and Levine and Weingart.

Concerning student attitudes and satisfaction, conflicting evidence appears to have been generated. Some reports trace student dissatisfaction with the incoherence of interdisciplinary attempts to integrate discipline-based knowledge and methods.

Other evidence suggest that well-constructed interdisciplinary programs can have a profound influence on student attitudes and satisfaction. Such programs may, in fact, do more to motivate student learning than the random conglomeration of disciplinary based courses and programs so prevalent today. The jury has yet to come in.

Research on Individualized Degree Programs

Individualized degree programs encompass any number of different instructional modes. They can be elected, selected, prescribed, or individualized. They can occur in general studies, liberal studies, interdisciplinary studies, or "unorthodox major programs." In general, individualized degree programs insist that undergraduates actively design a significant portion--if not all--of their studies to suite their own needs or interests.

The individualized degree is largely a creature of the last three or four years, and the research reflects this youthfulness. Much of it has sought to compare individualized degree program students with their "traditional" counterparts on aptitude, achievement, and affective measures. Baker, Morris, and Rodgers (1972), for example, noted that upperclass students entering Michigan's Bachelor of General Studies program had lower GPA's and aptitude scores, but ranked higher on such OAIS scales as Creative Personality and Humanities Interest. Additionally, one-third of the students entering the program had completed their foreign language study, which suggests that avoidance of this requirement did not motivate their choice.

However, it remains plausible that large numbers of students do use the bachelor of general studies programs to circumvent foreign language requirements. This notion is at least implied by Allen's (1972) survey of 101 Ohio University students enrolled in the general studies program. 45 per cent of the respondents indicated that foreign language was the most objectionable requirements in their previous degree programs.

Those who seek trends in research on individualized degree programs will eventually be brought to combining unpublished document listings in ERIC (e.g., institutional evaluation reports). Even there, findings are sparse and quite variable in depth and scope of research. Participants in the National Workshop on Special Degree Programs completed a survey with responses from 90 institutional programs featuring individualized degrees (Flournoy, 1973). A straightforward analysis of survey responses indicated that 35 programs mentioned no evaluation activity, six said they were too new for evaluation, eleven intended to engage in future evaluation, 16 named a campus unit charged with their evaluation, and 22 admitted involvement in or completion of some evaluation.

One can empathize with a reticence to grapple with research issues in the individualized degree domain. Each student venture, it would seem, represents a unique "curriculum" with its own criteria-setting problems. In many cases, the very philosophy which stimulates the evolution of an individualized degree program finds comparison on normed achievement scales objectionable. There appears to be some willingness to settle for the "market place" test, and let the case stand on client satisfaction.

One would nonetheless hope that some of the very real promise of individualized degree programs might be gauged. Does the task of designing one's own educational experience generate long-range benefits? Is there a tendency on the part of self-patterning students to capitalize on personal strengths or address personal weaknesses? Can one differentiate between the impacts of traditional and individualized degree programs on the development of general competencies? Findings that clearly meet such issues have yet to surface.

Research on Independent Study

Independent study is basically a student's self-directed pursuit of a learning experience, and may be characterized in varying degrees as time-free, space-free, course-free, and faculty-free activity. Responsibility for the learning experience falls primarily on the student. Dressel and Thompson (1973) suggest that "few areas in higher education today are so vaguely eulogized, yet so little understood, so loosely defined, and so inadequately researched as self-directed learning" (p..vii). They base this view on a survey of 253 institutions, 70 per cent of which had not evaluated their independent study offerings.

Where research does exist, it frequently compares independent study to other approaches in terms of academic achievement and student satisfaction. No conclusive differentiation has emerged from these comparisons, but there is some evidence to suggest that students achieve equally and are equally satisfied (See Murdock, 1973; Atherton, 1972). Atherton and Spaulding, et al., observed that independent study students often failed to complete work on time. The significance of this finding, beyond the obvious implication of confusion for academic schedules, is unclear.

Researchers have also treated variations within the independent study theme. Levine and Weingart have contrasted faculty perception of off- vs. on-campus independent study programs. Faculty seem more pleased with on-campus study -- about 25 per cent of the respondents rated off-campus projects "fair to unsatisfactory."

Beach (1974) disclosed that students who performed self-directed study on a group basis consulted more course readings than did students in a lecture-discussion context. His observations of a study group's behavior led the author to hypothesize that this mode of study might heighten communication and interpersonal skills, responsibility for one's own learning, curiosity, and critical-thinking skills. These are the kinds of research questions that warm our hearts.

Writers have considered the financial aspects of independent study, despite the fact that over 80 per cent of the 253 institutions in Dressel and Thompson's study had not estimated the costs for this approach. Bowen and Douglass (1971) suggested that independent study could be economically feasible if programmed on a group, rather than an individual basis. They warned that costs could grow exorbitant to the extent that independent programs required individual tailoring.

In this area of learner-centered reform, as in others, more fundamental questions must precede more fundamental research. For independent study, the most urgent questions are those that seek to clarify its goals and objectives. Creating "independent studyers" has long been an aim of higher education. Will "planned independence," as a systematic component of higher education, improve our aim? If so, what kinds of students will most benefit? Gruber and Weitman (1962) asserted no basis for a direct relationship between intellectual ability and the capacity to profit from self-directed study. If this is so, students at all levels of capability could benefit--if only the research could disclose what benefits accrue!

What does the research tell us?

There may be no such thing as an unchallengeably true generalization. Still, the student of research on learner-centered reform is likely to come away from his labors with certain impressions that are reinforced so often they become at least modal. Here are a few such impressions suggested by the weight of current research:

1. The outcomes of learner-centered curricula are no worse than (i.e., at least as good as) the outcomes of comparable traditional curricula. This seemingly flaccid and disappointing statement harbors significance. Not uncommonly, a curricular innovation with its own discrete objectives is asked, in addition, to defend its achievement of traditional goals it makes no special effort to address. Often the program demonstrates some gain toward its own objectives and does "as well" in meeting these added parameters. The proliferation of the "We do as well as ..." statements in the research is also attributable to the vast absence of data on the program-specific outcomes of traditional curricula. Quite often, the researcher is compelled to access a traditional curriculum's impact on the student via an achievement score on a nationally standardized instrument. The innovator then demonstrates "equivalence" with this slender surrogate for curricular impact.

2. Learner-centered curricula that clearly specify outcomes and the sequence of activities required to achieve them exhibit more success in demonstrating student achievement than curricula which do not. This may seem a trite observation in view of its repeated occurrence in the mastery and PSI research. However, there is a hint of something more here. One tradition asserts that the maturation of student capabilities should remain an implicit consequence of formal academic effort. There is some accumulation of evidence that desired educational gains ought to be made explicit in curricular design. Whether this is because explicitness permits less "slippage" on the part of the instructor, more focus on the part of the student, or both, is unclear.

3. The objectives of learner-centered curricula are in the main conservatively chosen. It is somehow odd that the least examined feature of even the most thoroughgoing learner-centered curricular reform appears to be its objectives. Learner-centered curricula embrace a broad array of quite differing objectives. Nevertheless, each tends to exhibit a relative clarity of goal. Once one understands what a given curriculum is trying to achieve, the chosen "delivery system" makes sense and is often predictable.

But the means used to specify objectives are age-old and unexceptional. For the great bulk of learner-centered curricula, academic tradition specifies the objectives. Established syllabi, for instance, quite often set the pace for the Keller Method. Many non-traditional curricula undergo radical redesign in order to match services to client need prescription. Other curricula shape themselves to develop behaviors prized in some occupational sector of society. Very seldom are objectives set on grounds other than tradition or some first-approximation response to the market place. Once set, the goals appear no more amenable to change than those of traditional curricula. Rarely are conscious efforts made to adjust program objectives in accord with program experience.

4. The cost of learner-centered curricula in terms of human resources is higher. This is a totally predictable outcome much ratified by the research. Even in instances where learner-centered curricular costs roughly equal those of comparable traditional programs, faculty activity studies disclose a greater commitment of personnel time to the program. A not unattractive corollary frequently emerges in evidence that students, too, give of themselves more intensively.

5. The administrative and bureaucratic difficulties of learner-centered curricula increase in direct proportion to their variance from previous curricular modes. It is, the research confirms, not easy to be different, and less easy to be more different.

6. Learner-centered curricula are seen by their clients as more responsive to client-perceived needs. Client attitudinal studies generally disclose higher student satisfaction with learner-centered curricula. In mastery method curricula, and occasionally in other types of learner-centered reform, there is evidence of some correlation between student-satisfaction and improved achievement.

What problems are there with the research?

As a body, the most immediately disturbing feature of research on learner-centered reform is that it is repetitious, and not cumulative. As we have already indicated, much of the research is embedded in semi-compulsory evaluative studies, commissioned either by a funding agency or a campus governing body. Similar learner-centered reforms in differing institutional settings are required to produce much the same sort of evaluative evidence. The result is a predictably monotonic parade of "research" and "findings," given any specific learner-centered innovation.

For much the same reasons, the research is distressingly "short term," and typically "one shot." Data tend to be gathered prematurely and quickly. They are scrutinized intensely to address the survival issues that confront innovative ventures, and then set aside. The longevity of concern and support required to build and sustain new research designs out of initial findings is too seldom present. The rather sad consequence is a fairly considerable aggregate expenditure of resources on repetitive snapshots of innovation, where the same funds might have sustained a carefully planned "x-ray" that could have revealed something of the anatomy.

Another peculiarity of the evaluation-embedded research on learner-centered curricula is that the most informative studies are not in the published journals, but rather in those unpublished evaluation reports which tend to come to rest in the files of curricular committees and funding agencies, or on the podia of national or regional conferences. A do-it-yourself test of this assertion requires nothing more than a comparison of both published and unpublished ERIC document listings.

One explanation that has, in the past, been offered for the repetitiveness of research on curricular reform might be called the "flash-flood" theory. The notion is that a new curricular approach spreads rapidly, and that vast numbers of people find themselves at the same stage of innovative effort struggling with the same issues. It is an overly facile theory, since one has no difficulty unearthing current research that "crosses the t's and dots the i's" of work done 20 years ago. There does, however, seem to be some as yet obscure pressure to replicate research beyond all reasonable utility.

That pressure may be a feature of the most troublesome confusion that besets curricular research, and that is the dominance of a rather naive set of aspirations we hold for research. Some of us blatantly expect--and those of us who should know better covet the hope--that research will tell us whether an innovation is good or not, once and for all, so that axieties are dissipated and everyone's satisfied. Perhaps that is why we do so little research on established curricula; they don't generate sufficient anxiety.

We have still not perceived research as a vehicle by which man shapes more proximate answers to vexing questions--some of which may remain perpetually vexatious, but productive of more and more useful answers. Nor have we coupled that perception with the incontrovertible evidence that building an optimal curriculum must be one of the most vexing questions of all. After all, curricula serve the bold enterprise of working changes on that most mysterious species--human beings.

The marvel is not that we wring such meager information from the research. The marvel is that curricula exist which have still to feel an inquisitive probe, and that educators exist who do not systematically question their trade. The ideal for curricular research is that it informatively and unobtrusively parallel curricular execution.

If one were to sketch a model for research on learner-centered curricula, we feel one would have to begin by re-profiling the role of a learner-centered instructor. He must come to an explicit awareness that the act of instruction is, in all aspects, essentially problematic. We are simply not sure how best to shape the act, how best to talk about its objectives, or how best to gauge its consequences. The teaching lore which now equips our instructor amounts to little more than a collection of historically-recycled hunches. Curricula are the contexts in which those hunches are played. Our instructor would nurture a permanent disposition to segregate and test specific hunches. Since academicians are purportedly trained to deal experimentally with what is unclear, our teacher's instructional behavior would be carefully and consistently experimental.

With a community of teachers who met instruction and curricula on these terms, extended and cumulative research would be possible. Its fruits would be increasingly clear insights concerning the very capabilities curricula seek to develop, not to mention how variables in the learning process advance or inhibit that development. We can't make gains on one side of this equation without making gains on the other. Unless our treatment of the act of instruction unfolds a clearer view of the dynamics of human development, we will not improve instruction. We will only repackage it.

Possibly the very phrase, "research on learner-centered reform," implies a mistaken strategy. We need "homo-centric" research, couched in the learning process, before we can say much about the value of "learner-centered reform." Again, like our Melanesian, we know too little a out the cargo we prize to promise much on its delivery. Perhaps a little less rattling of gourds, and more careful examination of how the gifts could be fashioned...

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